



SOUTH AUSTRALIA.

Annual Report

OF

The Central Board of Health

FOR THE

Year Ended 31st December, 1934.

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THE PUBLIC HEALTH.

Annual Report of the Central Board of Health to the Minister of Health (the Hon. George Ritchie).

Sir—

We have the honour to submit the annual report for the year ending 31st December, 1934, on the work of the Central Board of Health of South Australia. The Board administers The Health Acts, 1898-1932, The Food and Drugs Acts, 1908-1934, and The Early Notification of Births Act, 1926.

PART I.

GENERAL REVIEW OF ACTIVITIES.

Constitution of the Central Board.—The Central Board of Health consists of three medical men, one of whom is the Chairman and Permanent Head of the Department, appointed by the Governor, and two representatives of the Local Boards of Health. The members were Drs. A. R. Southwood (Chairman and Head of the Department), E. Angas Johnson, and Lionel B. Bull (members appointed by the Governor), Messrs. I. Isaacs (elected by the metropolitan Local Boards) and F. C. Lloyd (elected by the country Local Boards).

Dr. Bull resigned from the Board in January 1934. He left South Australia on receiving an important appointment in the Commonwealth Service. Professor J. Burton Cleland, Marks Professor of Pathology in the University of Adelaide, and Honorary Pathologist to the Adelaide Hospital, was appointed by the Governor to fill the vacancy caused by Dr. Bull's resignation.

The Chairman of the Board (Dr. A. R. Southwood) went abroad on leave in April and was absent seven months. He visited England, Scotland, Germany, France, Canada and the United States of America. He devoted a large part of his time to public health aspects of medical work. The Governor appointed him an Honorary Commissioner to inquire into and report upon the administration of health departments ; methods of public education in health matters ; methods of control of infectious diseases, and especially pulmonary tuberculosis ; and methods of food control.

During the Chairman's absence Dr. E. Angas Johnson was appointed Acting Chairman. On the return of Dr. Southwood, the Chief Secretary expressed to Dr. Johnson appreciation for his generous action in undertaking the duties in an honorary capacity. The Chief Secretary intimated that cordial relations had existed, and that the work had been carried out to the satisfaction of the Government.

Board Meetings.—During the year the Board met on 26 occasions. In addition to the routine matters associated with the work of the Department, a number of special items were dealt with ; these are reviewed in the appropriate portions of this report.

Staff of the Department.—The Board appreciates the loyalty and enthusiasm of the members of the Staff. No change in the personnel took place during the year. The Board also recognises that with the present reduced staff of the Department some branches of health work must remain inadequately provided for or wholly neglected.

Scope of the Work.—The Board continued its active policy of inspection and advice in connection with the administration of the Acts entrusted to its charge.

The following list indicates some of the routine inspections made by the Central Board Inspectors :—Slaughterhouses, 143 ; butchers' shops, 93 ; bakehouses, 258 ; hotels, 129 ; business premises, 1,475 ; private premises, 1,290 ; septic tanks inspected, 486 ; plans of septic tanks examined, 186 ; milk vendors' premises, 258 ; schools, 92 ; dealers in poisons, 867 ; food premises, 1,077 ; spirits tested, 560 ; exhumations and re-burials attended, 16.

Special investigations made by the Inspectors of the Central Board into various health matters included the disposal of waste waters, the sanitation of the watershed area serving the Metropolitan water supply, pollution of the River Torrens in the western districts, the operation of septic tanks, floods at Port Pirie, shacks on certain foreshores occupied by persons during the week-ends and for longer periods, and the disposal of spent wine wash.

Various matters relating to food and drugs were also inquired into. Some of the matters that received attention were : the marking of chilled eggs, pasteurization of milk, the declaration of certain drugs in the label on medicinal preparations, labelling of wine bottled from bulk, wine alleged to be deleterious, the cultivation of oysters in the Port River, and bakehouses in the Metropolitan Area.

"*Public Health Notes.*"—This small quarterly bulletin continues to serve a useful function in disseminating information among the various authorities and others interested in health work. The increased interest in the publication is evinced by the number of fresh applications that are received for copies. The Board was again fortunate in receiving most interesting and informative articles from various contributors, and appreciation is expressed to them for their able assistance.

Venereal Diseases.—In order that the general public should be informed as to the nature and danger of venereal infections and of the need for the early treatment by qualified medical practitioners, the Government approved the issue of a pamphlet on the subject. The pamphlet was accordingly drawn up by the Inspector-General of Hospitals in co-operation with the Central Board of Health. Copies of the pamphlet are now available to the public through the Central Board of Health and Local Boards of Health, Hospitals, and Medical Practitioners throughout the State.

Prevention of Tetanus.—In the latter half of the year several cases of tetanus occurred and were reported on in the press. Tetanus is not a notifiable infectious disease in South Australia. During the years 1923 to 1934 the numbers of deaths in consecutive years have been: 10, 11, 10, 4, 7, 5, 8, 5, 9, 17, 14, 13. The Board deemed it desirable to issue a statement for public information, and this statement is reproduced as Appendix I. of this report.

Legislation.—(a) *Dangerous Drugs.*—During the session of Parliament in 1934 an Act was passed to regulate the manufacture, sale, possession, distribution, and supply of certain dangerous drugs, and for purposes connected therewith. Power is given for enabling regulations to be made for carrying out all the purposes of the Act, which will come into operation on a date to be fixed. The legislation enacts the latest decisions of the League of Nations Conferences on the subject.

(b) *Food and Drugs.*—Various amendments which were found desirable in the administration were included in an Amending Act of the Food and Drugs Act passed during the same session. The amendments provide for securing that food and drugs are sold true to label, and unadulterated, for preventing the installation of automatic machines for the sale or supply of any drug or medicine, for preventing the employment of persons suffering from any infectious or loathsome disease in connection with the handling of articles of food and drugs, for allowing samples of many sealed packages to be procured for analysis under conditions so as to enable the provisions of the Act to be effectively enforced in such cases, and for registering premises where drugs or any specified drugs are prepared or manufactured for sale, or sold.

A special Act regulating the sale of margarine and prohibiting the addition of butter fat to it was passed. The legislation is placed under the jurisdiction of the Department of Agriculture.

(c) *Local Government.*—An extensive consolidation of the Local Government legislation was also passed. It refers, among other matters, to public health, and the principal new feature concerning this department relates to cemeteries.

Federal Health Council.—The Seventh Session of the Federal Health Council was held at Canberra in March, 1934. The Chairman of the Central Board of Health attended as representative for South Australia. Matters concerning which resolutions were passed were:—Standards for drugs, poisons legislation, diphtheria control, relationship between the medical profession and departments of public health, leprosy, and conferences of persons associated with the control in Australia of venereal diseases and of tuberculosis.

PART II.

VITAL STATISTICS.

Correction of Statistics.—Comparison of the figures for the year 1933 shown in our previous report with those shown below will reveal several apparent discrepancies. The figures shown below include the final corrections made by the Acting Government Statist.

Population of the State.—The figures supplied by the Acting Government Statist (Mr. A. W. Bowden) show that the rate of increase of the population continues to fall rapidly. In 1934 the natural increase—the excess of births over deaths—was 3,056. The loss by migration was 1,439. The following table sets forth the position with regard to the population of the State:—

Year.	Males.	Females.	Total.
1900	180,349	176,901	357,250
1905	181,467	181,154	362,621
1910	206,557	200,311	406,868
1915	220,967	225,018	445,985
1920	245,300	245,706	491,006
1925	276,266	270,792	547,058
1930	288,626	285,873	574,499
1931	289,405	287,708	577,113
1932	290,262	289,067	579,329
1933	291,730	290,985	582,715
1934	292,527	291,805	584,332

Births and Deaths.—The following return, also issued by the Acting Government Statist, shows the number of births and deaths, and the rate per 1,000 of mean population, and the number of infantile deaths (under the age of one year) and the rate per 1,000 births :—

Period.	Births.		Deaths.			
	No.	Rate.	Total.		Infants.	
			No.	Rate.	No.	Rate.
Mean—						
1920–24.....	11,857	23·43	4,901	9·68	693	58·45
1925–29.....	11,301	20·16	5,034	8·98	526	46·54
1930–34.....	8,989	15·54	5,001	8·65	342	38·05
Year—						
1930.....	9,984	17·42	4,851	8·46	482	48·28
1931.....	9,079	15·77	4,888	8·49	331	36·46
1932.....	8,521	14·74	4,957	8·58	312	36·62
1933.....	8,900	15·32	4,904	8·44	286	32·14
1934.....	8,459	14·50	5,403	9·26	301	35·58

Infant Mortality.—There was an increase of 15 in the number of deaths of infants under one year of age, the number being 301, the death rate of 35·58 per 1,000 births being the lowest except for the record of 32·14 in 1933, which was also the lowest yet recorded for any State and very little higher than the world record of 31·22 for New Zealand in 1932. The chief causes of the deaths of infants have been :—Premature birth, 78 ; malformations, 43 ; injury at birth, 20 ; congenital debility, 23 ; other diseases of infancy, 33 ; diarrhoea and enteritis, 17 ; broncho-pneumonia, 22 ; pneumonia, 10 ; whooping cough, 3 ; excessive heat, 6 ; infanticide, 4 ; and syphilis, 4.

Causes of Deaths.—The principal causes of deaths and the rates per 10,000 of mean population are shown in the subjoined table, extracted from Bulletin No. 1, of 1935, issued by the Acting Government Statist :—

Disease.	Persons.			Rates.		
	1932.	1933.	1934.	1932.	1933.	1934.
Diseases of the heart	857	816	957	14·83	14·04	16·40
Cancer and other malignant tumors	654	679	650	11·31	11·69	11·14
Tuberculosis (all forms)	275	303	281	4·76	5·22	4·82
Cerebral haemorrhage, softening, &c.	443	440	439	7·66	7·57	7·53
Pneumonia, Lobar-, Broncho-, &c.	331	326	404	5·73	5·61	6·93
Bronchitis (all forms)	64	69	86	1·11	1·19	1·47
Other diseases of respiratory system	102	101	109	1·76	1·74	1·87
Nephritis—Acute and chronic	254	290	260	4·39	4·99	4·46
Diabetes mellitus	113	116	110	1·95	2·00	1·89
Puerperal diseases	44	48	60	·76	·83	1·03
Congen. debility, malformations, &c.	209	210	207	3·62	3·61	3·55
Senile debility	311	315	370	5·38	5·42	6·34
Suicides.....	51	60	78	·88	1·03	1·34
Violent deaths (ex suicides).....	272	222	295	4·71	3·82	5·06
Diarrhoca and enteritis	68	33	76	1·18	·57	1·30
Whooping cough	4	11	7	·07	·19	·12
Diphtheria and croup	11	19	14	·19	·33	·24
Influenza	12	34	51	·21	·59	·87
Typhoid fever	13	2	4	·22	·03	·07
Appendicitis and typhilitis	36	32	44	·62	·55	·75
Hernia and intestinal obstruction	68	41	55	1·18	·70	·94
Cirrhosis of liver	17	21	22	·29	·36	·38
Tetanus.....	17	14	13	·29	·24	·22
All other	731	702	811	12·65	12·08	13·91
Total	4,957	4,904	5,403	85·75	84·40	92·63

PART III.

SANITATION.

Importance of Continued Supervision.—The Central Board, through its Inspectors, supervises the sanitary work of Local Boards throughout the State. Continued supervision and guidance in this manner is essential to ensure a high standard of sanitary services. Many Local Boards also employ trained inspectors to direct the work of their areas, and this practice should be extended still further. In some areas two or more adjacent Boards could conjointly employ a trained inspector.

Disposal of Sewage.—For the purpose of disposing of the sewage from Port Adelaide and adjacent areas a contact aeration activated sludge system is being established at Port Adelaide by the Engineering and Water Supply Department. It is expected that the system will be completed in March, 1935. In certain respects this system is considered to be an improvement on the activated sludge plant installed at Glenelg the previous year.

Holiday Camps.—Special attention was again given to the camps of holiday makers at the beaches and elsewhere during Christmas-time. Provision of satisfactory sanitary arrangements is insisted on, and the camps are inspected to assure their being kept in a clean and sanitary condition. There is no reason at all why holiday camps should become dirty and unhealthy.

Floods at Port Pirie.—In August an embankment at Port Pirie gave way, permitting a large area of the town to be flooded. The Local Board proved alive to its responsibilities; all precautions were observed and action taken to ensure that the health of the people was protected. Our State is fortunate in having very rarely to contend with such disturbances.

PART IV.

FOOD AND DRUGS.

The Advisory Committee under the Food and Drugs Act, 1908.—The Act provides that this Committee, appointed by the Governor, shall consist of the Chairman of the Central Board of Health, who shall preside, the Professor of Chemistry in the University of Adelaide, the Government Analyst, the Officer of Health for the City of Adelaide, and three other persons conversant with trade requirements. At the beginning of 1934 the members were Dr. A. R. Southwood (Chairman), Professor A. Killen Macbeth, Mr. W. T. Rowe (Government Analyst), Dr. E. Angas Johnson, Messrs. J. White and F. M. Standish.

During the seven months that the Chairman was absent abroad Dr. E. Angas Johnson acted in his stead.

On 1st March, 1934, Mr. W. Murray Fowler was appointed to the Committee as a member conversant with trade requirements, in succession to Mr. J. W. Grasby who died in the latter part of the previous year.

On 23rd August, Mr. John White, who was one of the original members, resigned his position as a member of the Committee. The Committee regretted his resignation and fully realised and sincerely appreciated the valuable assistance he had so freely given to the Committee since its inception twenty-five years ago.

On 6th September, Mr. E. F. Lipsham was appointed to fill the vacancy caused by the resignation of Mr. White.

In October, Professor Killen Macbeth left for a six months' trip abroad. The Governor appointed him an Honorary Commissioner to inquire into and report upon Poisons and Dangerous Drugs. It is expected that Professor Macbeth will obtain information of considerable value to the Committee.

The Committee at its meetings gave consideration to poisons, spirit strength of fortified wines, wrapping of food, margarine, motor spirit containing lead tetra-ethyl, pasteurised milk, bottled milk, certified milk, certified pasteurised milk, fruit squash, fruit squash cordials, fresh fruit squash drinks, cocoa, olive oil, stamping preserved eggs, egg pulp and ice blocks. The Chief Secretary was advised of those matters in which the Committee thought that action was necessary.

Water Supply.—Owing to the low state of reservoirs serving the Metropolitan Area, it was considered advisable in June for a comprehensive inspection of the catchment areas to be made by an Inspector of the Central Board of Health accompanied by Officers of the Engineering and Water Supply Department. Generally the conditions found were satisfactory and no danger to the public health was found to exist. Necessary action was taken to maintain strict supervision of the catchment areas.

Vendors of Milk.—The Central Board of Health continued to provide for the licensing of vendors of milk and the registration of their premises in the majority of the Local Board districts outside the metropolitan area. The number licensed for the year ended 30th June, 1934, was 414. In the metropolitan area, the Metropolitan County Board exercises control, licensing 1,511 vendors. Forty-one Local Boards, in the more closely settled areas outside the metropolitan area, effecting licensing in their districts, licensed 249 vendors. Continued progress was made in bringing all premises registered into conformity with requirements of structural and sanitary condition.

Meat Supply.—In connection with the meat supply for the Town of Port Pirie and the District of Pirie the Central Board of Health inquired into the condition of the slaughtering premises which are situated in the district of Pirie. Accumulations of manure, bones and offal and other insanitary conditions were found to exist. The Central Board was not satisfied that the inspection of those premises had been adequate. In view of the fact that there were 19 slaughterhouses in the district and on account of the conditions found existing, it was suggested that serious consideration be given to the matter of the establishment of public abattoirs to serve the town and district. The authorities concerned are conferring on the matter.

Control of Sale of Poisons.—This is an important branch of the staff's activities ; 867 visits were made by Central Board Inspectors, and 858 persons were licensed as dealers in poisons.

Model Dairy at Whyalla.—The Broken Hill Proprietary Company, Limited, erected and equipped a dairy at Whyalla for the use of the licensed vendors of milk, and for persons who own cows to supply their own domestic requirements. Previously the cows had been housed and milked in various buildings throughout the town. The new dairy provides a more sanitary arrangement. The dairy consists of two stone buildings, one housing the milking bails and feed storage bins, and the other consisting of a utensil room and a washing-up room, which is equipped with sterilizing appliances.

Declaration of Certain Drugs.—Previous to 1932 the Food and Drugs Regulations provided that the regulation on this subject did not apply to any proprietary medicine compounded by a registered pharmacist, provided that the formula of such medicine had been deposited with the Central Board of Health. This provision was disallowed by Parliament in the regulations published in 1932. A survey of the proprietary lines on sale during the year showed that in a number of cases the drugs required to be declared were not being so done. Necessary action was taken to ensure compliance.

Bakehouses.—During the sittings of the Federal Royal Commission inquiring into the wheat, flour, and bread industries, a statement was made by counsel to the effect that some bakehouses were dirty, vermin-infested, and unsuitable for the purposes required of them. An inspection was made of 181 bakehouses by an inspector of the Central Board of Health accompanied by inspectors of the Metropolitan County Board. The inspection showed that some of the bakehouses were old buildings, but it did not show that bread, cake, or pastry was being manufactured in premises unsuitable for that purpose. Most of the bakehouses were in a satisfactory condition as regards repair and cleanliness. At some of them minor matters required attention.

Lead Poisoning in Factories.—Inquiries regarding battery works during the year showed that the manufacture of electric accumulators is a growing industry in this State and, in view of the risk of lead poisoning associated with the various processes, Local Boards of Health were circularised. The circular is reproduced as Appendix II. to this report.

PART V.

PREVENTION AND CONTROL OF INFECTIOUS DISEASES.

The subjoined table sets out the numbers of cases of infectious diseases reported during 1934, and the deaths that have occurred. The cases and deaths for the preceding two years are also shown in the table.

Infectious Diseases.	Cases Reported.			Deaths.		
	1932.	1933.	1934.	1932.	1933.	1934.
Cerebro-Spinal Meningitis	—	3	2	—	—	1
Chickenpox	928	1,062	1,099	—	—	—
Diphtheria	517	877	582	11	17	13
Dysentery—Amoebic	—	—	—	1	—	—
Dysentery—Bacillary	31	5	2	4	3	1
Encephalitis Lethargica	2	2	1	2	4	1
Erysipelas	94	130	183	3	3	3
Endemic Typhus Fever	4	8	8	1	—	—
Influenza	44	804	1,280	14	30	57
Malaria	—	—	3	—	—	—
Measles	45	13,469	1,249	1	13	7
Mumps	2,292	454	27	—	1	—
Paratyphoid Fever	—	3	—	—	—	—
Poliomyelitis Anterior Acute	18	13	4	2	—	1
Puerperal Fever	67	80	43	10	10	12
Pulmonary Tuberculosis	342	383	370	238	257	242
Scarlet Fever	837	978	643	2	4	1
Typhoid Fever	46	13	20	12	1	2
Whooping Cough	1,542	1,008	1,313	4	11	6

Influenza Epidemic.—The outstanding item in the infectious diseases return for 1934 is the sharp influenza epidemic that occurred in September and October. For the year there were 1,280 cases notified with 57 deaths. Influenza is one of those illnesses that recurs in epidemic form in most communities every year or so. It is now 15 years since the last big world-epidemic. In 1919, nearly 10,000 cases were notified in South Australia, and there were 518 deaths. Although in the years since then the numbers have been much lower, and the illness milder, the disease is still one to be treated with great respect. Sufferers from severe colds and from influenza are well advised to take to their beds early in the illness, and to stay there until they are well.

Diphtheria.—The diphtheria figures have fallen slightly this year. There were 582 cases notified, with 13 deaths, and of these 393 cases and 11 deaths occurred in the first half of the year. The State's record severe year for diphtheria was in 1921, when 2,744 cases were notified, and 123 deaths occurred. The maximum figure for cases reported during the last 10 years has been 877 in 1933, and for deaths, 33 in 1926.

Diphtheria is an illness that can now be prevented by the application of modern medical knowledge, and the wider adoption of immunization should soon remove all its dangers. Many Local Boards have carried out immunization campaigns, but to be really effective as a public health measure it is necessary steadily to continue the process on fresh batches of young children. It is best to immunize a child before it reaches school-going age, preferably at the age of one or two years.

In November the Board requested the Chairman and Professor Cleland to report on the matter of diphtheria immunization. The suggestions outlined in their report were adopted by the Central Board and forwarded to the Government. It is hoped that the scheme suggested as outlined in Appendix III. of this report, will be provided for in the forthcoming financial year.

PART VI.

PREVENTION AND CONTROL OF TUBERCULOSIS.

Pulmonary tuberculosis still constitutes a most important public health problem. During the year 370 cases were notified ; 242 deaths occurred, the death rate being 41·4 per 100,000 population.

The subjoined table indicates that tuberculosis causes almost three times as many deaths as all other infectious diseases combined.

Deaths which occurred in South Australia from pulmonary tuberculosis, from tuberculosis (all forms), from all notifiable diseases (other than pulmonary tuberculosis), and from all causes during the years 1922-34 (inclusive) :—

Year.	Pulmonary Tuberculosis.	Tuberculosis (all Forms).	All Noti- fiable Diseases (other than Pul. Tub.).	All Causes.
1922.....	319	377	117	4,608
1923.....	334	369	172	4,961
1924.....	336	382	150	4,870
1925.....	332	380	129	4,979
1926.....	346	391	118	4,877
1927.....	335	362	128	5,128
1928.....	291	341	111	5,147
1929.....	302	343	86	5,039
1930.....	256	292	121	4,851
1931.....	291	332	111	4,888
1932.....	238	275	66	4,957
1933.....	258	303	96	4,904
1934.....	242	281	105	5,403

Supervision of Home Conditions.—Tuberculosis is commonly spread from an infected person to others in his household, and especially to the children and young adults. Patients are usually instructed by their attending physicians on the dangers of spreading infection, on the need for care, and on the methods of protecting others. Nurse-Inspectors of Local Board staffs do valuable work in advising on home conditions, and also in encouraging contacts and suspects to be medically examined. Some Local Boards, even in the metropolitan area and in the large towns, have no nurse-inspector on their staffs, and so fail to give residents in their areas this much appreciated assistance.

PART VII.

CONCLUSIONS AND RECOMMENDATIONS.

1. This report indicates that, judging by present-day standards, the public health of the State remains in a fairly satisfactory position.
2. The responsibility for carrying out most of the public health work devolves on Local Boards, and continued enthusiasm on the part of these bodies is essential to success. Local Boards should have at their disposal properly qualified health inspectors and nurse-inspectors to conduct the health activities in their areas. Many Local Boards find it difficult to employ such trained personnel in a whole time capacity, and in such instances it would be well for two or more adjacent boards to combine in employing their staff.
3. Throughout the State there is need for continued and even increased effort. The natural conditions of our State are essentially healthful, and it is to our shame that much avoidable illness still persists.

4. In many instances the staffs of Local Boards need augmenting if health work is to be conducted on thorough lines. The present financial stringency has no doubt hampered progress to a large extent, but it must be recognised that grave dangers to health may arise from excessive stinting of expenditure for health work.

5. The co-operation of the practising medical profession with the activities of Local Boards must be fostered to the greatest possible extent. To achieve its highest aims, official medicine needs the support of private practitioners.

6. The duty of the Central Board is to supervise the work of Local Boards, and in doing this it endeavours to stimulate and guide Local Boards in their activities. An increase in the trained personnel of the Central Board staff is necessary to promote this work.

7. Tuberculosis remains the greatest health problem in our State ; although recent years have shown gradual improvement in the situation, there is still much to be done. The basis of anti-tuberculosis work is the proper supervision of home conditions, and this is the duty of Local Boards. The services of trained nurse-inspectors are absolutely essential for the proper guidance of patients and their families along right lines of domestic hygiene.

8. No matter how enthusiastic official bodies may be, the best results can hardly be won without the support of the general public. The community should realise that Boards of Health exist for its protection against disease. There is rarely need for panic or anxiety, but there is need for a continued calm instruction of the general public in the right way of living if the highest degree of community health is to be attained.

A. R. SOUTHWOOD, Chairman.

E. ANGAS JOHNSON,	} Members.
J. B. CLELAND,	
H. S. HATWELL,	
F. C. LLOYD,	

S. C. STENNING, Secretary.

Adelaide, April 9th, 1935.

APPENDIX I.

THE WAY TO PREVENT TETANUS.

The Central Board of Health, at its meeting held on the 11th December, 1934, issued the following statement for public information :—

Tetanus or lockjaw is due to infection by a germ, the tetanus bacillus. The germ is especially likely to be present in horse manure, and so garden soil and road dirt commonly carry the infection. Moreover, the germ forms spores or seeds, which being very resistant to heat and to antiseptics are not easily destroyed.

The common mode of entry of the germ or its spores is by a wound. Even a small cut may provide the way. A punctured wound, as from a nail entering the sole of the foot, often allows infection to enter and develop. During the Great War it was found that most wounds contaminated with soil from vineyards and cultivated fields became infected with tetanus.

There are three stages in the development of tetanus in human beings. First is the entry of infection, generally by a wound. Then, the germs developing in the wound produce a poison or toxin which is carried to other parts of the body. The tetanus toxin has a special affinity for nerve cells, and the third stage of the disease is due to the violent action of the toxin on nerve cells of the brain and spinal cord.

It is not till the third stage that the definite symptoms of lockjaw occur. By that time the delicate nerve cells are so badly involved that recovery—even with most intensive treatment—is unlikely.

In the early stages of infection tetanus may be prevented. The special serum, used early, is practically infallible. Its use in the War almost banished tetanus from the armies : serious infection only occurred in those wounded men who refused the serum, or who did not receive it early enough.

A doctor should be consulted early in all cases of dirty wounds. Although it is generally impossible to say for certain if a wound is infected or not, it is wise where a wound is contaminated with manure, road dirt or garden soil to give a preventive dose of anti-tetanic serum. If the wound is a punctured one, as from a rusty dirt-carrying nail, the serum should certainly be given. The dose of serum is 2,000 units (international scale) injected under the skin. It is advisable to repeat this in 10 days if the wound has not healed by then. Early treatment of an infected wound in this manner will prevent the development of tetanus.

APPENDIX II.

CENTRAL BOARD OF HEALTH.

To Local Boards of Health.

THE PREVENTION OF LEAD POISONING IN FACTORIES.

The manufacture of electric accumulators is a growing industry in this State, and in view of the risk of lead poisoning associated with the various processes it is desirable that Local Boards of Health and other official bodies concerned, employers and employees, and the general public should be acquainted with the conditions necessary to ensure safe working.

The Health Act, 1898, has two important sections relating to the matter :—

Section 83 requires that no person shall commence or extend any trade, business, process or manufacture whereby lead or other poisoning may be caused, without the consent in writing of the Local Board. This section applies only to such districts as may from time to time be declared by proclamation to be under the protection of such section.

Section 84 provides that, if in the opinion of certain authorities or individuals any place used for any trade or business shall be or likely to become injurious to the health of or offensive to the inhabitants of the district or any person employed therein, the Local Board may institute summary proceedings against the person carrying on the trade or business. On conviction the person shall be liable to a penalty. The Court, however, may suspend its final determination when the person undertakes or adopts means for preventing or mitigating offence.

The Local Government Act, 1934, gives certain powers to establish a manufacturing district within the area of a municipality or district. Sections 556 to 568 of Part XXVIII. of the Act prescribe the conditions.

The Industrial Code, 1920, provides that all factories within the metropolitan area are to be registered and that minimum health and safety conditions are to be observed. The portions of the code dealing with these matters is contained in Part V., Division III., pages 102 and 103, and Part V., Division IX., pages 109 to 111.

Officers of Local Boards concerned should be thoroughly conversant with the legislation cited, and should co-operate effectively with officers of the Factories Department when necessary.

Two aspects need consideration in the interests of public health : (1) possible contamination of the atmosphere by lead-containing fumes, and (2) absorption of lead by workmen engaged in the factories.

The subjoined notes set out briefly the main requirements of the Factories Department. Compliance with these should completely safeguard the health of workmen. Before granting a permit to commence or extend such factory, Local Boards should make reasonable enquiries that these requirements shall be capable of fulfilment by the applicant.

The main processes involved in the manufacture of electric accumulators are :—

- (1) smelting of lead and its compounds.
- (2) casting of lead plates.
- (3) making of litharge.
- (4) mixing of litharge with other materials to form the paste.
- (5) pasting the plates.
- (6) drying the plates.

BUILDING REQUIREMENTS.

1. The floor of all rooms in which lead or its compounds are used for the manufacture of electric accumulators should be of smooth-surfaced cement. Floors should be kept damp during working hours, and thoroughly cleaned daily.

2. The walls of the pasting and mixing rooms should be lined with smooth-faced cement to the height of 6 feet above the floor.

3. Ample ventilation arrangements should be provided, including a system of mechanical ventilation.

4. Efficient control of dust and fumes should be provided for by approved mechanical means.

5. A suitably furnished luncheon-room should be provided for the use of employees. It should have no direct communication with a work-room.

6. Two suitably furnished dressing rooms should be provided. In the first should be removed and stored all private clothing of workmen put off during working hours. In the second should be put on, removed, and stored all overalls and other clothing worn only while at work.

7. A suitable lavatory with adequate supply of hot and cold water should be provided for the use of employees.

8. Shower-bath accommodation, with hot and cold water, should be provided for workmen engaged in the manipulation of dry oxides of lead or in pasting.

9. Work benches on which dried plates are manipulated should be of grid or iron mesh construction, under which a suction hood is fitted. Other work benches should have impervious tops, and be thoroughly damped and cleaned daily.

10. A typed notice, in terms of the subjoined " Hygienic Requirements for Workmen " should be posted in a conspicuous place in each work-room.

HYGIENIC REQUIREMENTS FOR WORKMEN.

1. No male under the age of 18 years, and no female of any age, should be employed in a lead process.

2. The employer should provide for all workmen overalls consisting of coat and trousers, and india-rubber gloves. These should be thoroughly cleaned once a week or oftener.

3. No person should work at a lead process unless he wears overalls and indiarubber gloves which are in good repair.

4. No workman should smoke while engaged in a lead process.

5. Food should not be taken into any work-room.

6. After leaving the work-room, a workman should remove overalls and head covering, and thoroughly wash his face and hands before entering the luncheon-room or partaking of food.

7. Workmen engaged in packing or handling dry white lead, dry red lead, or litharge should wear a suitable respirator and head covering.

8. For his own safety every person employed in a lead process should make full and proper use of the appliances provided.

9. Workmen should be medically examined at least once every three months with a view to the detection of any early signs of lead poisoning.

10. Workmen should constantly bear in mind that they are handling dangerous substances, which if absorbed into the body may produce serious harm. If proper care is taken there is no likelihood of danger. Take no risks !

By direction of the Central Board of Health.

S. C. STENNING, Secretary.

Adelaide, January 22nd, 1935.

APPENDIX III. DIPHTHERIA IMMUNIZATION.

REPORT OF CHAIRMAN AND PROFESSOR CLELAND.

We conferred on this matter on 30th November, and now report that :—

1. We consider immunization with anatoxin a satisfactory procedure.
2. Local Boards should be encouraged to provide facilities in their districts making immunization available to people who desire it. This has been done already by several Local Boards (Port Pirie, Mount Gambier Town, Clare Town and District, Renmark Town and Cobdogla).
3. The Government should be asked to provide the immunizing agent (diphtheria prophylactic or formalised anatoxin) free for distribution by the Central Board to medical practitioners, Local Boards of Health, Baby Health Centres, Children's Hospital, Mareeba Babies' Hospital, Orphanages, and similar institutions.
4. Persons or institutions desiring to be supplied with anatoxin free of cost should apply to the Central Board, and in the application should set out the plan proposed, and agree to send to the Central Board a "return" of persons immunized and a report on the results observed.
5. It is best to protect children of the pre-school age ; from the age of six months to two years is a suitable time.
6. In children under six or seven years Schick-testing is hardly necessary, and sensitivity-testing need not be done.
7. School children may also be immunized. Many of the older children, however, will have acquired some degree of immunity. In children over seven years sensitivity-testing is desirable.
8. The anatoxin should be injected in three doses, at fortnightly intervals. The doses should be 0.5 c.c., 1 c.c. and 1 c.c.
9. The actual cost of anatoxin to immunize one person will be approximately one shilling (this provides for a reduced cost to be obtained by buying a large quantity).
10. Unless an exceptional demand for immunization should occur—such as may arise if diphtheria became very prevalent—£250 should be a sufficient sum to cover the anatoxin required for the first year.
11. The plan suggested provides for a small skeleton scheme, which can readily be expanded if greater need arises.
12. Leaflets should be issued by the Central Board, briefly explaining the action of the anatoxin and method of using it.

A. R. SOUTHWOOD,

J. B. CLELAND.